REMARKS

Claim rejections under 35 USC 102

Claims 1-6 and 8-10 have been rejected under 35 USC 102(e) as being anticipated by Rajwar (7,120,762). Claim 1 is an independent claim, from which the remaining pending claims rejected on this basis ultimately depend. Applicant submits that claim 1 is patentable over Rajwar. Applicant thus submits that the remaining pending claims rejected under 35 USC 102 are patentable at least because they depend from a patentable base independent claim.

Claim 1 is limited to a "hardware *transactional* approach to executing code sections [being] employed to attempt to execute the code section before a software approach to *locking* memory is ever employed to attempt to execute the code section. Thus, the "first time the code section is attempted to be executed," "the software approach to *locking* memory is not employed to attempt to execute the code section prior to the hardware *transactional* approach being employed to attempt to execute the code section."

It is important to understand what is meant by a *transactional* approach to executing a code section, as well as what is meant by an approach to *locking* memory to executing a code section, as used in the claim language. A transactional approach to executing a code section means that the entire code section is completely executed, or none of the code within this section is executed. Stated another way, the code section is executed *speculatively*, such that at the end of this speculative execution, it is determined whether to commit the execution of the code section. If committed, then the entire code section is completely executed. If not committed, then the entire code section is not executed. In this respect, Applicant refers the Examiner to paragraph 9 on page 2 of the patent application as filed. By comparison, a locking approach to executing a code section means that a lock is first obtained prior to executing the code section, so that it can be ensured that the code section is completely executed properly. In this respect, Applicant refers the Examiner to paragraph 8 on pages 1 and 2 of the patent application as filed.

Therefore, that the claimed invention employs a transactional approach to execute a code section before employing an approach to locking memory to execute the code section means that the invention first attempts to *speculatively* execute the code section, and if such transactional execution fails, the invention then *obtains an appropriate lock* to execute the code section. Applicant respectfully submits that the foregoing is the correct, most reasonably broad interpretation that can be afforded the claim language. At the very least, Applicant respectfully notes that the Examiner has not provided a competing interpretation of the claim language.

Applicant contends, however, that Rajwar does not attempt to *speculatively* execute a code section (i.e., using a transactional approach, using the parlance of the claims) prior to employing a *lock* in order to execute the code section, in contradistinction to the claimed invention. This is readily apparent in FIG. 5 of Rajwar. In FIG. 5, Rajwar *first* employs locking to execute a code section, in parts 60 and 64, and *thereafter* speculatively executes the code section in parts 66/68/70. As such, it cannot be said that Rajwar *first* speculatively executes a code section (i.e., using a transactional approach, using the parlance of the claims), and *thereafter* employs locking to execute the code section, in contradistinction to the invention.

Stated another way, Rajwar speculatively executes a code section *only* if it has detected that a lock is not relevantly in the process of being acquired in part 60, and that a lock is in fact not hold in part 64. That is to say, speculative execution of the code section in part 66 is performed *only after* it has been detected that lock acquisition is occurring in part 60 but that a lock is not held in part 64. Parts 60 and 64 of Rajwar thus disclose employment of an approach to *locking memory* to execute the code section, which is performed *before* speculative execution (i.e., a transactional approach, using the parlance of the claims) of the code section in part 66. Rajwar's ordering of using a locking approach prior to using a transactional approach is directly opposite to the claimed invention's ordering of using a transactional approach prior to using a locking approach.

For instance, consider the following example. A code section has begun to be executed. In Rajwar, it is determined whether a lock is in the process of being acquired in part 60 (col. 7, ll. 58-61). If the lock is in the process of being acquired, then Rajwar next determines if a lock is in fact held on the section in question (see col. 8, ll. 4-7). Importantly, if a lock is held, then "the lock elision circuit 24 again loops back, allowing standard execution" of the code section (col. 8, ll. 8-11). That is to say, if a lock is held, then Rajwar says "OK, a lock is held, so I will let the code section be executed in a standard way" – i.e., the code section is executed *using locking*; a lock has been held, so Rajwar never reaches the point where speculative execution is performed in parts 66/68/70. By comparison, note that the claimed invention only uses locking if speculative execution (i.e., a transactional approach, using the parlance of the claims) has already been attempted – whereas Rajwar does not even try speculative execution if a lock is already being successfully held.

Thus, speculative execution of Rajwar in parts 66/68/70 of FIG. 5 is performed in a very specific set of circumstances. These specific circumstances are: a lock is attempting to be acquired in part 60, but no lock has yet been acquired/held in part 64. When this occurs, Rajwar says that it "elides" the lock acquisition process in part 65; that is, the lock acquisition process is suppressed, to use the definition of "elite" provided by the Internet web site www.dictionary.com. Importantly, note that this process is very different than the invention: in the invention, speculative execution (i.e., a transactional approach) is first attempted, and if it fails to execute the code section, then an approach to locking memory is employed to execute the code section. By comparison, in Rajwar, speculative execution is attempted *only if a locking approach has been attempted, but has not yet succeeded (i.e., a lock is not yet held)*.

In conclusion, Applicant notes that the standard for anticipation under 35 USC 102 is that every aspect of a claim must *identically* appear in a single prior art reference for it to anticipate the claim under 35 USC 102 (In re Bond, 15 USPQ2d 1566 (Fed. Cir. 1990)). "[T]here must be *no difference* between the claimed invention and the reference disclosure, as viewed by a person

of ordinary skill in the field of the invention" (Scripps Clinic & Research Found. v. Genentech, Inc., 18 USPQ2d 1001, 1010 (Fed. Cir. 1991)). In this respect, Applicant notes that a "prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention" (W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983)).

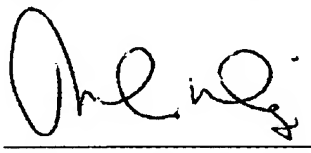
Because Rajwar discloses that speculative execution (i.e. a transactional approach, to use the parlance of the claim language) is performed only if a locking approach has been attempted, but has not yet succeeded, and because the claimed invention conversely is limited to performing a locking approach only if speculative execution has failed, the claimed invention is not *prima facie* anticipated by Rajwar. To go back to the actual claim language, a "transactional approach to executing code sections is employed to attempt to execute the code section before a software approach to locking memory is ever employed to attempt to execute the code section." This differs from what Rajwar explicitly discloses, since Rajwar first determines whether an approach to locking memory is being employed before it ever employs a transactional/speculative approach, which is opposite of what is recited in the claim language. For these reasons, Applicant respectfully requests that the Examiner reconsider his rejection of the pending claims.

Claim rejections under 35 USC 103

Claims 7 and 11 have been rejected under 35 USC 103(a) as being unpatentable over Rajwar in view of Herlihy, and further in view of McKenney (2002/0078284). As an initial matter, Applicant respectfully requests that the Examiner clarify in an advisory action whether the rejection of claims 7 and 11 was in fact intended to be over a combination of references including Herlihy, insofar as Herlihy was not relied upon to reject claims 1-6, 8-10, and 18-20. That is, Applicant presumes that the Examiner intended to reject claims 7 and 11 under 35 USC 103(a) over Rajwar in view of McKenney, without involving Herlihy.

In any case, claims 7 and 11 are dependent claims, and therefore are patentable at least because they ultimately depend from a patentable base independent claim, claim 1, as has been discussed above.

Respectfully Submitted,



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